

TAXONOMIC REVISION OF THE ELAPID SNAKE GENUS *DRYSDALIA*  
 WORRELL 1961

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**Abstract**

The southern Australian snake genus *Drysdalia* (Worrell 1961) is reviewed and a key provided for the four species recognised. *Drysdalia rhodogaster* (Jan 1963) is elevated from synonymy and fully described for the first time. The types of each species are discussed in detail and lectotypes nominated where necessary.

**Introduction**

Boulenger (1896) allocated many of the small Australian elapid snakes to the genus *Denisonia* Krefft, 1869. Australian herpetologists followed Boulenger's scheme until the genus *Denisonia* became an unwieldy, polyphyletic taxon. For example, Kinghorn (1956) listed 19 (27.5%) of the 69 Australian elapid species and subspecies under this genus. In 1961 Worrell revised the genus *Denisonia* and re-allocated the previously included species to ten genera, eight of which he described for the first time. Worrell's revision proved controversial and some of his allocations were not accepted. Cogger (1979) presents a consensus view of the accepted taxa.

The genus *Drysdalia* was erected by Worrell in 1961 to receive three species (*Elaps coronatus* Schlegel, 1837; *Hoplocephalus coronoides* Günther, 1858; and *Hoplocephalus mastersii* Krefft, 1866) which Boulenger (1896) had placed in *Denisonia*. *Drysdalia* has been widely accepted as a valid genus but it has become apparent that the included species are in need of revision. The present revision has involved examination of all specimens held in the National Museum of Victoria, the Western Australian Museum, the South Australian Museum and the Australian Museum. In addition, all relevant type specimens for species now included in *Drysdalia* have been examined. As a result of this revision four species are now recognized, each occupying a discrete geographical range:

*Drysdalia coronoides* (Günther, 1858)  
 South-eastern Australia, Bass Strait Islands and Tasmania.

*Drysdalia coronata* (Schlegel, 1837)  
 South-western Australia and associated islands.

*Drysdalia mastersii* (Krefft, 1866)  
 Southern South Australia and adjacent areas in Western Australia and Victoria.

*Drysdalia rhodogaster* (Jan, 1863)  
 South-eastern New South Wales.

As there is an extensive literature on venomous snakes, mainly for the popular market, only publications considered to be of primary taxonomic importance have been included in the synonymies.

Abbreviations used for institutions in this paper are:

Australian Museum	AM
British Museum (Natural History)	BM(NH)
Muséum National d'Histoire Naturelle	MNHP
National Museum of Victoria	NMV
South Australian Museum	SAM
Western Australian Museum	WAM

**Key to species of *Drysdalia***

1. Distinct white stripe edged above by black running along upper labials from below the nostril, under the eye often to the neck . . . . . 2.  
 Lacking distinct white stripe running along upper labials . . . . . *D. rhodogaster*
2. Distinct pale or dark band (sometimes broken medially) across the nape . . . . . 3.  
 Lacking band across the nape . . . . .  
 . . . . . *D. coronoides*
3. \*Band across the nape black . *D. coronata*  
 Band across the nape pale yellow-orange . . . . .  
 . . . . . *D. mastersii*

\* Some specimens from the Archipelago of the Recherche lack the black band across the nape. *D. coronata* can usually also be distinguished from other species of the genus by its broader frontal. See Table 1.

**Drysdalia** Worrell, 1961

- Elaps* (part) Schlegel, 1837, *Partie Générale*: 180-182, *Partie Descriptive*: 435-444.  
*Alecto* (part) Duméril and Bibron, 1854: 1249.  
*Alecto* (part) Jan, 1863: 116-117.  
 (part) Jan & Sordelli, 1873: pl. 1, figs. 1 & 3, pl. 2, fig. 2.  
*Hoplocephalus* (part) Günther, 1858: 213.  
 (part) Krefft, 1869: 53.  
*Denisonia* (part) Boulenger, 1896: 333.  
 (part) Waite, 1929: 217.  
*Drysdalia* Worrell, 1961: 25 (type species *Hoplocephalus coronoides* Günther, 1858 by original designation).  
 Worrell, 1963: 122-123.  
 Cogger, 1975: 382-383.

**Diagnosis:** Small, rather slender snakes ranging from a minimum total length of 100 mm (snout-vent length 80 mm) to a maximum total length of 650 mm (snout-vent length 550 mm). Nostril in single nasal. Frontal longer than broad, less than one and a half times width of supraocular. Internasals present. Suboculars absent. Dorsal scales smooth, 15 scale rows at midbody, very rarely 17. Lower lateral scales not noticeably enlarged. Ventral scales smooth and unkeeled, range from 123 to 157. Subcaudal scales smooth and undivided, range from 32 to 67. Anal scale undivided. Posterior process of maxillary bone short, 3 to 5 solid maxillary teeth follow the hollow fang.

***Drysdalia coronata*** (Schlegel, 1837)  
 Crowned Snake

- Elaps coronatus* Schlegel, 1837, *Partie Générale*: 182, *Partie Descriptive*: 454. Type locality: Nouvelle Hollande (= Australia).  
 Gray, 1841: pl. 5, fig. 2.  
 Guibé & Roux-Estève, 1972: 133.  
*Trimesurus olivaceus* Gray, 1841: 443. Type locality: New Holland.  
*Elaps melanocephalus* Gray & Neill, 1845 (non Wagler, 1824): 416.  
 Type locality: King Georges Sound.  
*Alecto coronata* Duméril & Bibron, 1854: 1255, pl. 76, b, fig. 2.  
*Hoplocephalus coronatus* Günther, 1858: 215.  
 Krefft, 1869: 62, pl. 6, fig. 3.  
*Denisonia coronata* Boulenger, 1896: 335.  
 Waite, 1898: 55.  
 Glauert, 1950: 40.

- Denisonia coronoides* Glauert, 1950: 41.  
*Drysdalia coronata* Worrell, 1961: 25.  
 Worrell, 1963: 122.  
 Cogger, 1975: 382.

**Types:** Schlegel (1837) wrote his "Essai sur la Physiologie des Serpens" in two sections. The first section of 251 pages entitled "Partie Générale" was a general account of snakes, while the second section of 606 pages entitled "Partie Descriptive" was a more detailed account of the species and genera. *E. coronatus* was described in both sections (see synonymy) and Sherbourne (1925) lists both of these descriptions as parts of the original. The description on page 182 of "Partie Générale" provided ventral and subcaudal counts for a single specimen, while that on pages 454-455 of "Partie Descriptive" has ventral and subcaudal counts, plus snout-vent and tail length measurements for two specimens. The scale counts provided on page 182 differed from those provided on page 455, thus it would appear that Schlegel had at least three specimens which he referred to *Elaps coronatus* in 1837. The existence of the first part of the description was apparently last noted by Gray (1841) until Guibé and Roux-Estève (1972), as major works between these times have listed the second part of the description as the original. Consequently this has led to the belief that *E. coronatus* was based on two syntypes. Guibé and Roux-Estève (1972) listed two specimens in the *Muséum National d'Histoire Naturelle*, Paris as syntypes.

All the specimens examined by Schlegel in 1837 were collected from "Nouvelle Hollande" (= Australia) by Quoy and Gaimard or by Péron and Lesueur. Schlegel (1844) gave the distribution of the species as south western Australia. Duméril and Bibron (1854) recorded that two of Schlegel's specimens were collected from "Port du Roi Georges de la Nouvelle Hollande" (= King Georges Sound) by Quoy and Gaimard.

Four possible type specimens were located in the *Muséum National d'Histoire Naturelle*, Paris in 1973. Two of these are not indicated as types in the catalogues and are registered simply as having been collected from "Australia" by Quoy and Gaimard (MNHP No. 4694) and Péron (MNHP No. 4695). There is no indica-

tion in the catalogues that these were Schlegel types, and Guibé and Roux-Estève (1972) did not consider that they belonged to the type series. The remaining two specimens (MNHP No. 321—old number 4696, and MNHP No. 7677—old number 4697) are both indicated as Schlegel types in the catalogues and both are registered as having been collected from "Port du Roi Georges" by Quoy and Gaimard. These are the two specimens listed by Guibé and Roux-Estève as syntypes. One of these specimens (MNHP No. 7677) now has a damaged tail and cannot be compared to the original description. The second specimen (MNHP No. 321) is complete and agrees in scalation and dimensions with one of Schlegel's types. This specimen is selected as lectotype.

*Lectotype:* MNHP No. 321 (old number 4696). Muséum National d'Histoire Naturelle, Paris.

*Locality:* Port du Roi Georges de la Nouvelle Hollande (=King Georges Sound, Western Australia), Quoy and Gaimard.

*Description:* Snout-vent length 250 mm. Tail length 59 mm. Total length 309 mm. Scales round midbody 15. Ventral scales 143 (Schlegel, 1837, 142; Guibé and Roux-Estève, 1972, 138—see below\*). Subcaudals undivided, 51 (Schlegel 54, Guibé & Roux-Estève, 48). Anal scale undivided. Upper labials, 6, 3rd and 4th subocular. Lower labials 7. Internasals one third the size of the pre-frontals. Temporals 2+2.

*Colour:* Dorsal surface brown. Ventral surface light brown. Distinct black stripe bordered below by white runs across the nape then forward along the upper lip below eye and around snout.

*Condition:* Well preserved.

*Paralectotype:* MNHP No. 7677 (old number 4697), Muséum National d'Histoire Naturelle, Paris. Data as for lectotype. Ventral scale count 141. Subcaudal scales undivided, tail truncated. Lower labials 6. All other details as for lectotype.

The paralectotype and other two specimens possibly available to Schlegel are conspecific with the lectotype.

*Trimesurus olivaceus* Gray 1841, was included in the synonymy of *Denisonia coronata* by Boulenger (1896) although Gray did not mention the species in publications subsequent to the original description. Boulenger's action is followed as Gray's (1841) description fits *D. coronata* as recognized here. No type specimen has been located. Gray did not list a type specimen, or possible type specimen in his British Museum Catalogue (1849) and neither did Günther or Boulenger in their catalogues published in 1857 and 1896 respectively. As searches of collections in most of the major European Museums were made in 1973-74, the type is presumed lost.

*Elaps melanocephalus* Gray and Neill 1845, has not subsequently been mentioned in the primary taxonomic literature (e.g. Boulenger 1896). We consider Gray and Neill's description to be inadequate, and tentatively include the name in the synonymy of *D. coronata* as the type locality given was King Georges Sound. No type specimen has been located and, as with *T. olivaceus*, no mention is made of a type or possible type in any of the British Museum catalogues. For these reasons, as with *T. olivaceus*, the type is presumed lost.

As Wagler (1824) used the combination *Elaps melanocephalus*, Gray and Neill's (1845) name is a secondary homonym.

#### Other Specimens Examined

A further 158 specimens were examined—147 from the mainland and 11 from the Archipelago of the Recherche. From these is derived the following general description.

*Size:* Largest adult: Snout-vent length 548mm; tail length 103mm; total length 651mm.

\* Peters, 1964: 378 lists three methods employed to make ventral scale counts. Method 2 has been used throughout this paper. Guibé & Roux-Estève probably used Method 1 which gives a slightly lower count.





Figure 1 – Map showing distribution of *Drysdalia coronata*.

*Juveniles at birth:* snout-vent length 136 mm; tail length 28 mm; total length 164 mm.

*Scalation:* Scales round midbody 15, (WAM R41717 had 17 anterior rows and 15 at midbody). Ventral scales range from 132-157 with a mean of 142.7 (N=158). There was some evidence of an increase with latitude and insularity as mainland specimens ranged from 132-152 with a mean of 142.2 (N=147) and Recherche Archipelago specimens ranged from 145-157 with a mean of 150.4 (N=11). Subcaudal scales were all undivided and ranged from 36-54 with a mean of 44.3 (N=149). Once again there was some evidence of an increase with latitude and insularity as mainland specimens ranged from 36-52 with a mean of 44 (N=138) while Recherche Archipelago specimens ranged from 42-54 with a mean of 50.2 (N=11). Anal scale undivided in all specimens.

*Colour:* Dorsal surface light brown to dark olive brown, ventral surface lighter, yellowish to pale olive, base of ventral scales normally darker. Head normally darker than body with a distinct black stripe bordered below by white running across the nape then forward along upper lip below (and sometimes through) eye then around snout. In some specimens from the Archipelago of the Recherche the band across the nape was reduced and in two specimens (AM Nos. R7715-6) it was absent altogether.

*Localities and Registered Numbers:*

Western Australia. (WAM) No data R4233; Muchea R459; Jandakot R1206; Perth R1326; Bunjil R1335; Tambellup R2104; North Perth R4835; Belmont R4976, R14485; Denmark R4993-4, R10098, R24960-2, R30680; King River, near Albany R5615; Busselton R6057, R6196, R9597; Wanneroo R6346; Bornholm R6483; Cranbrook R6566; Albany R7763-4; Waroona R7813; Bokol R8370; Millbrook R8922; Esperance R8938, R11365, R13674, R17863; Wagerup R8986, R9364; Mondrain Island R10106, R53119; Armadale R13817; Mount Many Peaks, via Albany R14167; Israelite Bay R14205; Geraldton R15071; Safety Bay R15072; Cheyne Beach R15073, R31169; Dalyap River R15075; 22 km E. of Esperance R15076; Jerramungup R18547; Doubtful Island Bay R19798-9; Upper Kalga R21368-70; Witchcliffe R21965; 32 km E. of Esperance R21995; Frenchmans Bay, Albany R22483-8; Penguip R22489; Augusta R24906; 5 km N. of Cape Leeuwin R25879; Cape Le Grande R29643; ?Bunbury R31196; Rockingham R36175; Ruddocks Cave, near Witchcliffe R36716; Middle Mount Barren R36899; Boondadap River R37217; Two People Bay R37837-8, R44995; Riverton R39781; Scott River R41717; Middle Island R41915, R47725; Mississippi Bay, Cape Le Grande National Park R41955, R41959; 4 km N. of Frenchmans Peak, Cape Le Grande National Park R41957; Mount Merrivale, near Esperance R43884; West of Point Culver R44973; Bremer River R45651; Kent River Area R46544-5; Merrap R47885, R51472-3; Walpole R51472-3; Bluff Knoll R51775-6; Cranbrook or Broomhill R53735-6; Serpentine R53737; 5 km N. of Fitzgerald Inlet R55936: (AM) No data 5745; Western Australia 6604-6, R10461; King George's Sound 6601, 6603, 6607, 6611-2, 6615; Bornholm R7688; Mondrain Island R7715-6; Mississippi Bay, Cape Le Grande National Park R7717; Tambellup R9891, R11104, R11531, R13137; Esperance R30342, R74152-60; Albany R74150-1: (NMV) No data 61153; Western Australia R702, R2792-3, R11114-20, R11122-4, R12824, D6376; Champion Bay R2791; Archipelago of the Recherche D8255; Perth D8832.

**Drysdalia coronoides** (Günther, 1858)

## White-lipped Snake

*Hoplocephalus coronoides* Günther, 1858: 215.

Type locality—Tasmania.

Kreffit, 1869: 62-63. pl. 12. figs. 1, 1a.

*Alecto labialis* Jan & Sordelli, 1873, (non Jan, 1859): pl. 1, fig. 1. Type locality—Australia.

*Denisonia coronoides*: Boulenger, (part) 1896: 336.

Waite, (part) 1898: 55.

Waite, (part) 1929: 220-221.

Kinghorn, 1929: 174.

Worrell, 1956: 206-7.

*Denisonia nigra* De Vis, 1905: 50. Type locality—Tasmania.  
= *Denisonia coronoides* (Günther, 1858) after Mack & Gunn, 1953: 63.

*Denisonia coronoides coronoides* Kinghorn, 1956: 163.

*Drysdalia coronoides* Worrell, 1961: 25.

Worrell, (part) 1963: 122.

Cogger, 1975: 383.

**Types:** Günther (1858) listed 18 specimens in the original description but Boulenger (1896) mentioned only 16 types. Sixteen type specimens were located in the British Museum (Natural History) in 1973 and all could be traced directly to Boulenger's list (p. 337) as specimens A, a-i and k-q and to Günther's type list (pp. 215-216) excluding one specimen designated as f and the second of the two specimens designated under n. These specimens were not entered in the Museum's accessions books or registers and, as Boulenger did not list them, it is assumed they were lost prior to 1896.

In order to stabilize Günther's name *coronoides* and limit the type locality, one of the nine specimens collected in Van Diemens Land (= Tasmania) by Mr. R. Gunn has been selected as the lectotype.

**Lectotype:** BM(NH) 1946.1.17.39 (old number 52.1.15.29), British Museum (Natural History), London.

**Locality:** Van Diemens Land (= Tasmania), R. Gunn.

**Catalogue References:** Günther (1858) Specimen a; Boulenger (1896) specimen A. a.

**Description:** Snout-vent length 342 mm. Tail length 81 mm. Total length 423 mm. Scales round midbody 15. Ventral scales 150 (Boulenger, 1896, 151). Subcaudal scales un-

divided, 45. Anal scale undivided. Upper labials 6, 3rd and 4th subocular. Lower labials 6. Rostral contacts 1st labials, nasals and internasals. Single preoculars contact 2nd and 3rd labials, nasals, prefrontals and supra-oculars. Frontal contacts prefrontals, supra-oculars and parietals. Post-oculars paired, contact supra-oculars, parietals, upper anterior temporals and 4th and 5th upper labials. Temporals 2 + 2.

**Colour:** Dorsal surface brown, ventral surface grey speckled with black. Distinct white stripe edged above by black runs from below nostril under eye to neck.

**Condition:** Well preserved but epidermal scales sloughing off in parts.

**Comment:** This specimen has been chosen as lectotype as it agrees with the description and locality data published by Günther (1858); it was part of a series of specimens collected by R. Gunn in Tasmania; and also it was specimen 'a' in Günther's and Boulenger's catalogues which is often an indication the specimen was the original author's primary specimen. In addition the lectotype has reliable documentation, as all jar labels and entries in old and new accessions books, museum registers and published catalogues agree. The lectotype was also the best preserved of the available syntypes.

**Paralectotypes:** All in British Museum (Natural History) London.

Tasmania, R. Gunn, BM(NH) 1946.1.17.40; BM(NH) 1946.1.17.43; BM(NH) 1946.1.19.1-4; BM(NH) 1946.1.20.74-75: Tasmania, A. J. Smith, BM(NH) 1946.1.17.44-45: Australia, Earl of Derby, BM(NH) 1946.1.17.47: Tasmania, Zoological Society, BM(NH) 1946.1.17.49: Swan river ? BM(NH) 1946.1.20.59: Tasmania, Lords of the Admiralty BM(NH) 1946.1.20.60-61.

Ventral scale counts in order of current registration numbers are: 142, 142, 147, 143, 141, 148, 144, 144, 143, 147, 147, 144, 147, 140, 148. This gives a range of 140-150 for the type series with a mean of 144.8.

Subcaudal scale counts in order of current registration numbers are: 50, 49, 54, 54, 41, 56,

45, 49, 49, 54, 48, 46, 47, 53, 57. This gives a range of 41-57 for the type series with a mean of 49.8.

Coloration of paralectotypes as for lectotype. All paralectotypes are conspecific with the lectotype.

*Alecto labialis* Jan and Sordelli 1873, is a primary homonym of *Alecto labialis*, Jan 1859. The specimen illustrated by Jan and Sordelli from the "Musée de Paris" is obviously referable to *D. coronoides* as recognized here and a series of specimens registered in the MNHP as *Alecto labialis*, Jan, (MNHP Nos. 4694 (1-10), 4695 and 4695(a)) are all conspecific with the lectotype of *D. coronoides*.

*Denisonia nigra* De Vis 1905, described from a specimen from Tasmania was relegated to the synonymy of *D. coronoides* by Mack and Gunn (1953). The holotype in the Queensland Museum (Reg. No. QM J196) is conspecific with the lectotype of *D. coronoides*.

#### Other Specimens Examined

In order to determine the intraspecific variation in some important taxonomic characters a further 294 specimens were examined—210 from the Australian mainland and 84 from Bass Strait and Tasmania.

**Size:** Largest adult: Snout-vent length 400 mm; tail length 103 mm; total length 503 mm. Juveniles at birth: Snout-vent length 99 mm; tail length 27 mm; total length 126 mm.

**Scalation:** Scales round midbody 15 in all specimens except NMV D35781 from Deal Island, Bass Strait which has 17. Ventral scales range from 123-152 with a mean of 138.4 (N=294). There was some evidence of an increase with latitude as mainland specimens ranged from 123-149 with a mean of 137.3 (N=210) while Bass Strait and Tasmanian specimens ranged from 128-152 with a mean of 141.7 (N=84). Subcaudal scales were all undivided and ranged from 38-67 with a mean of 47.3 (N=276). Once again there was some evidence of an increase with latitude as mainland specimens ranged from 38-67 with a mean of 46.4 (N=204) while Bass Strait and Tasmanian specimens ranged from 41-64 with a

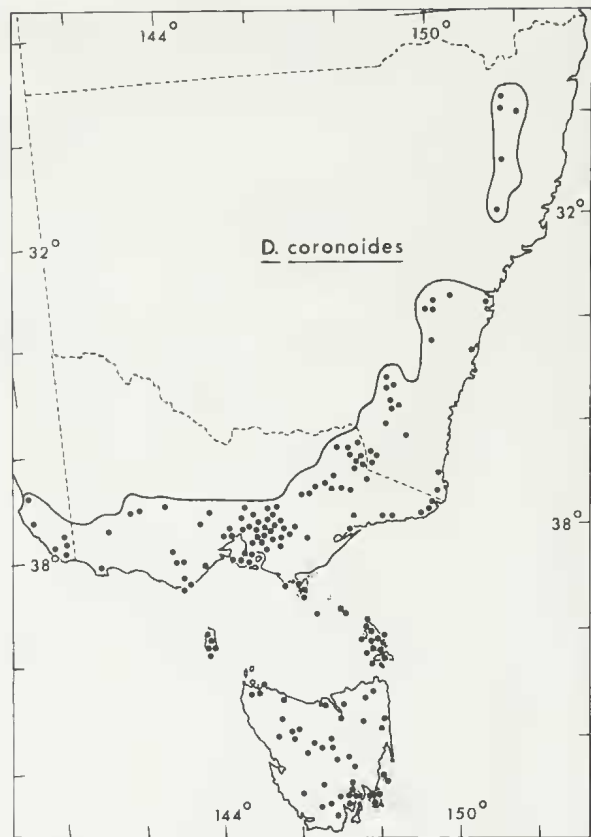


Figure 2—Map showing distribution of *Drysdalia coronoides*.

mean of 49.7 (N=72). Anal scale undivided in all specimens.

**Colour:** Juveniles at birth: Dorsal surface black, ventral surface salmon pink to orange. Head same colour as body with a white stripe edged above by black running along the upper lip from the nostril under the eye to the neck and sometimes beyond. Adults: Brown or olive green dorsal surface, ventral surface salmon pink to orange often merging into light green anteriorly. Head same colour as body with a white stripe edged above by black running along the upper lip from the nostril under the eye to the neck and sometimes beyond. In Tasmania the duller colours prevail and sometimes there is a second white stripe running from the upper temporal area to the neck.



*Localities and Registered Numbers:*

South Australia. (SAM) Lake St. Clair, near Robe R341; Port McDonnell R3714; Kingston R13403; Cape Banks R14722; (NMV) Mt. Gambier D35746-9; D35751-2; 16 km N. of Mt. Gambier D35755-8.

New South Wales. (AM) Walcha R1503; North Shore, Sydney R1605; Cooma R3362; ? Narromine R3607-8; Mt. Kosciuszko R5108, R6508, R9451, R10533, R13022, R58529-33; Ben Lomond R6776; Wee Jasper R7122; Glenlea, Glen Innes district R9388, R59242; Pambula R12605; Tubrahuca R13350-1; Goodradigbee Caves R25985; Mt. Kaputar National Park R26170; Shellharbour R27459; 7.2 km N. of Taralga R29737; Nadgee Nature Reserve R41651; 8 km W. of Jenolan Caves R58535; 8 km S.W. of Guy Fawkes R58540; (NMV) Kiandra D35710-11; Mt. Kosciuszko D35715-6, D35723-4, D35778-80; 16 km N. of Tin Mine Huts D35727-8; Dead Horse Gap D35741; Mt. Victoria D37808; 9 km S. of Tarama D39509; 12 km W. of Jenolan Caves D39510. Locality for (AM) R3607-8 is presumed to be in error following the entry in the Australian Museum register.

Australian Capital Territory. (AM) Uriarra R2497; Brindabella Ranges R25985; (NMV) Piccadilly Circus D35714; Mt. Franklin D39219.

Victoria. (SAM) Maroondah Dam R3935; (AM) Portland R11749; Altona R13897; 3.2 km W. of Weeragua R58534; 4.8 km W. of Mt. Hotham R58536; 8 km W. of Mt. Hotham R58537; Mt. Hotham R58538; 24 km N. of Benambra R58539; (NMV) Yarra River 42981-2; Croydon R2901-2, R11038, R11043; Gembrook R8048, R8117; Beaconsfield R10865; Upper Yarra R11025; Western Port R11026, D4439; Gippsland R11027, D3606; Ringwood R11028, R13597-8, D3597-8; Wilsons Promontory R11029; Murray River R11032; Bruthen R11044; Darby River R11047, D35775; Laverton R13599, D35759; Wamton D2720; Bungaree D4267; Frankston D4334; Belgrave D4584-5; Pt. Nepean D4611; Orbost D4665; Wandin D5555; Mt. St. Leonard D7863; Selby D7994; Blanket Bay D8072; Kinglake D8759; The Basin D8852, D35732-3, D35763; Ferny Creek D8965; Glengarry

D10043; Shelley D17181, D17212, D18006, D18152; Paynesville D17765, D35731; Pombooneit East D18239; Mt. Hotham D18269; Anglesea D33167-8; Grampian Ranges D33167; Cape Otway D33390, D35726; 1.6 km N.W. of Mt. Braugon D33494; Junction of Latrobe River and Hawthorn Creek D33606; Binroy D33656; Mt. Disappointment D34162, D35734-6, D35739-40, D37821-6, D37828; Red River Inlet D34249-50; Fidal River D35708; Point Cook D35709; Martins Hill D35717; Penny saddle D35718; Mt. Baw Baw D35721-2; 16 km W. of Cowombat Plains D35725; Murrindindi D35745; Pirron Yallock D35753; 3.2 km W. of Frankston D35754; Yan Yean D35760; Warragul D35761; Portland D35762; Upper Beaconsfield D35764; Mt. Lovell D35766; Kalorama D35767, D35774; Sorrento D35768; Mt. Blackwood D35770; Brooklyn D35771; South Warrandyte D35772; 1.6 km N. of Darby River D35776-7; East Warrburton D35783; 8 km N. of Cape Otway D35785; Blairgowrie D35788; Mt. William D35790; 8 km E.S.E. of Oneco D35791; Noojee D37829; Dartmouth Dam inundation area D39064-5, D41245, D41339, D41486, D41760, D41784, D41888, D41922, D42366; Falls Creek D35911; 16 km N.N.E. of Mt. St. Leonard D39569; 3.2 km S. of Mallacoota Airport D39577; 1.6 km S. of Mallacoota Airport D39578; Cobungra D39579; Mt. Howitt D42043; Davies Plain Creek D47527; Mt. Murphy D47613, D47662; 5 km W. of Marlo D47909.

Bass Strait, Curtis Island Group. (NMV) Curtis Island D39570-4.

Furieux Island Group. (AM) Flinders Island R10524-5; Babel Island R13757; Great Dog Island R13758; (NMV) Babel Island D11839; Cape Barren Island D14298-300; Flinders Island, no precise locality R11039-40, D14301-2, D11840, D18141, D35773, Robertdale D11739, Killiecrankie Bay D12331, Between Whitemark & Emita D13846, Deep Bight Gully D13855, Long Point D16527, North Pat's River D33772, Palana D35719, Wallanuppi D35743-4, The Dutchman D35765, Ronga Cove D35784; Preservation Island D35703; West Sister Island D13856.

Kent Island Group. (NMV) R11037; Deal Island, no precise locality D4293-4, D8099,

D35742, D35781-2, D42097, D50361, Garden Cove D35713; Erith Island D35720, D35729-30, D50361.

King Island Group. (NMV) King Island R11023-4.

Tasmania. (SAM) Barn Bluff R5441; Cradle Mountain R12093-4; (AM) no data R6650A-C, R12760; Ouse River 6618, 6620-1; Mt. Wellington R5477-8; North Tasmania R7122; Fern Tree Glen R9465; Collins Vale R12043; (NMV) no data R11031, D4893; Circular Head R11034-5; Port Esperance R11042; Port Arthur D8352; near Lake Pedder D10935; Picton D10954, D11224; St. Mary's D13661; 3.2 km N.W. of Salt Water River D35704, D35706, D35786; 4.8 km N. of Todd Corner D35705; 2.4 km S.E. of St. Mary's D35707; 19.2 km W. of Smithton D35774; 2.4 km E. of Dee D35787; 6.4 km N. of Roseberry D35789; Maydena D39476.

***Drysdalia mastersii* (Krefft, 1866)**  
Master's Snake

*Hoplocephalus mastersii* Krefft, 1866: 370. Type locality—Flinder's Range, S.A. Krefft, 1869: 63.

*Denisonia coronoides* Boulenger, (part) 1896: 336-337.

*Denisonia coronoides* var. *mastersii* [sic] Kinghorn, (part) 1929: 175.

*Denisonia coronoides mastersii* Kinghorn, (part) 1956: 164.

*Drysdalia mastersii* Worrell, (part) 1961: 25.

Worrell (part) 1963: 123.

Cogger, (part) 1975: 383.

*Types:* Krefft's original description dated 26th June 1866 and issued on 5th September stated that Mr. George Masters had found seven specimens in the Flinder's Range and it is assumed that the description was based on these specimens. Thus there may have been seven syntypes. One syntype was located in the British Museum of Natural History in 1973. This specimen (BM (NH) No. 1946.1.17.42, old number 66.6.13.2) is clearly shown in the Accessions Book to have been purchased from Mr. G. Krefft as "one of the types of *Hoplocephalus mastersii*" from the Flinder's Range on the 13th of June 1866. All catalogue entries, jar labels etc. carry the same information and this specimen was listed as "One of the

types of *H. mastersii*" by Boulenger in 1896 (page 337).

The Australian Museum Collection includes seven specimens of *D. mastersii* which could have been available to Krefft in 1866. Six of these, AM Nos. 6622-27, are recorded in the Register as having been collected in "S. Australia—?" and all were originally identified on Krefft's jar labels as *Hoplocephalus mastersii*. The seventh specimen, AM No. 6619, is recorded in the Register as having been collected from the "Ouse R. Tasmania G. Masters", presumably in error as specimens AM Nos. 6618, 6620 and 6621 are *D. coronoides* specimens with the same data. No Australian Museum reptile specimens were registered before Krefft left the Museum and the original Register data were taken from Krefft's jar labels (H. Ehmman, pers. comm.). It is possible that additional specimens of *D. mastersii* arrived at the Museum after Krefft had prepared the original description as Masters despatched two consignments of specimens from the Adelaide, Port Augusta, Port Lincoln and Flinder's Range areas in November 1865 but only one had arrived at the Museum by 18th January 1866. (H. Ehmman, pers. comm.).

From the above it can be seen that the British Museum (Natural History) received one definite syntype BM(NH) No. 1946.1.17.42 in 1866 and the Australian Museum collection contains seven specimens all of which may have been available to Krefft. Thus the collections of the British Museum of Natural History and the Australian Museum include eight possible syntypes.

In order to stabilize Krefft's name *mastersii* the only extant specimen which is undoubtedly one of Krefft's syntypes and for which reliable data is available has been selected as the lectotype.

*Lectotype:* BM(NH) 1946.1.17.42 (old number 66.6.13.2), British Museum of Natural History, London.

*Locality:* Flinder's Range, South Australia, purchased from G. Krefft.

*Catalogue Reference:* Boulenger (1896) specimen B.a.



**Description:** Snout-vent length 231 mm. Tail length 54 mm. Total length 285 mm. Scales round midbody 15. Ventral scales 134 (Boulenger, 1896, 140). Subcaudal scales undivided, 39. Anal scale undivided. Upper labials 6, 3rd and 4th subocular. Lower labials 7. Rostal contacts 1st labials, nasals and internasals. Single preoculars contact 2nd and 3rd labials, nasals, prefrontals and supra-oculars. Frontal contacts prefrontals, supra-oculars and parietals. Post oculars paired, contact supra-oculars, parietals, upper anterior temporals and 4th and 5th labials. Temporals 2 + 2.

**Colour:** Dorsal surface light brown, ventral surfaces light yellow speckled with black, ventral and subcaudal scales grey at margins. Distinct light yellow band two scales wide runs across the nape. Distinct white stripe edged above by black runs from below nostril under eye to neck.

**Condition:** Well preserved.

**Comments:** This specimen has been chosen as lectotype as it is the only available specimen which is clearly indicated as one of Krefft's types and also it agrees closely with the original description. In addition the lectotype has reliable documentation as all jar labels and entries in old and new accessions books, museum registers and published catalogues agree.

**Paralectotypes:** All the possible paralectotypes located are in the Australian Museum, Sydney.

Six specimens were recently tentatively added to the Australian Museum's type collection. These were AM Nos. 6622-27 collected from South Australia. For these specimens, ventral scale counts in order of current registration numbers are: 140, 143, 144, 141, 142, 134. Subcaudal scale counts in order of current registration numbers are: 37, 34, 38, 36, 41, 39.

A seventh Australian Museum specimen, AM No. 6619 registered as having been collected from Ouse River Tasmania by George Masters (see above) may have been available to Krefft. This specimen has 140 ventral and 43 subcaudal scales.

The ventral scales of these seven specimens

range from 134-144 with a mean of 140.6 and the subcaudals range from 34-43 with a mean of 38.3.

Coloration is as for the lectotype.

All seven specimens are conspecific with the lectotype.



Figure 3 — Map showing distribution of *Drysdalia mastersii*.

#### Other Specimens Examined

A further 60 specimens were examined.

**Size:** Largest adult: Snout-vent length 253 mm; tail length 62 mm; total length 315 mm. Juveniles at birth: Snout-vent length 83 mm; tail length 20 mm; total length 103 mm.

**Scalation:** Scales round midbody 15 in all specimens. Ventral scales range from 130-146 with a mean of 136.7 (N=58). Subcaudal scales were all undivided and ranged from 32-51 with a mean of 41.0 (N=57). Anal scale undivided in all specimens.

**Colour:** Juveniles at birth: Dorsal surface dark olive-brown ventral surface bright orange-red. Head darker than body, with a white stripe running along the upper lip from the nostril under the eye to the neck. Light yellow band across nape. Adults: Olive grey to olive green dorsal surface, ventral surface orange centrally, grey speckled with black laterally. Head darker than body, sometimes black, a white stripe edged

above with black running along the upper lip from the nostril, under the eye to the neck. A light yellow to off-white band two to three scale wide runs across the nape. Nape band normally narrowly broken on mid-line but often complete.

*Localities and Registered Numbers:*

No data. (SAM) R2334, R6648A-B.

Western Australia. (WAM) Eucla R18482, R24644; Cocklebidy R24668, R27470; 43 km S. of Madura R34417; 40 km S.S.E. of Mundrabilla R36717; Esperance R40009-10; 15 km S.S.E. of Cocklebidy R60811; South Australia (SAM) Ceduna R1165; West Coast R1600; Port Lincoln R2333, R2414, R11648, R11768, R11768A-B, R12903; Coombe R2362; Davenport Creek, West Coast R2455; Kulkami R4755; 3.2 km E. of Bleaford, Eyre Peninsula R4754A-C; "C" Island, Venus Bay R8996; Naracoorte R9305; End of Yorke Peninsula R9307; St. Francis Island R11775; Femelon Island R12860; Nundroo, West Coast R14564; Koppio R14698; Scorpion Springs R15194; Stenhouse Bay R15327; (NMV) Fowlers Bay D4590-5; Kirton Point D8846-7; Port Lincoln D8855, D8945, D9042, D9086, D9209, D9537, D16496-500.

Victoria: (NMV) Yanac D11155; Telopea Downs D16502; Red Bluff D40197; 5.5 km W. of Wyperfeld National Park Office D51683; 18 km W. of Wyperfeld National Park Office D51718.

***Drysdalia rhodogaster* (Jan, 1863)**

*Alecto rhodogaster* Jan, 1863: 117. Type locality—Australia. Jan & Sordelli, 1873: 6, pl. 2, fig. 2.

*Hoplocephalus collaris* Macleay, 1887: 1111-2. Type locality—Bega, N.S.W. (As Goldman, Hill & Stanbury, 1969, do not mention this species, the type is presumed lost).

*Denisonia coronoides* Boulenger, (part) 1896: 336.

*Pseudelaps minutus* Fry, 1915: 93, fig. 7. Type locality—Colo Valley, N.S.W. = *Drysdalia mastersii* (Kreffl, 1866) after Cogger 1979: 208.

*Denisonia coronoides mastersii* Kinghorn, (part) 1929: 175.

*Denisonia coronoides mastersii* Kinghorn, (part) 1956: 164.

*Denisonia mastersii* Worrell, 1956: 207, fig. 7 c-d.

*Drysdalia mastersii* Worrell, (part) 1961: 25. Worrell, (part) 1963: 123. Cogger, (part) 1975: 383.

*Types:* Jan (1863) described this species from a specimen (or specimens?) in the collection of the Hamburg Museum said to have come from Australia. Jan and Sordelli (1873) subsequently provided a clear illustration of a specimen, stating that it was in the Hamburg Museum and had come from Australia.

Unfortunately the Hamburg Museum catalogues and some of the type collections were destroyed by bombing during World War II (P. Grünwaldt pers. comm.). However, the general collection and many of the types survived intact with jar labels. Thus it is impossible to check directly from catalogues the number of specimens available to Jan or the status of any surviving specimen, and jar labels are the only primary source of information.

In 1863 Jan (p. 117) described five Australian species of *Alecto* from specimens in the Hamburg Museum. In 1973 a series of consecutively numbered specimens ascribed to these species on original jar labels were located in the Hamburg Museum collection.

These specimens, the corresponding Jan species names and their current identifications are as follows:

UHZ No. 476 *A. permixta* (= *Cryptophis nigrescens*)

UHZ No. 477 *A. rhodogaster* (= *Drysdalia rhodogaster*)

UHZ No. 478 *A. schmidti* (= *Austrelaps superbis*)

UHZ No. 479 *A. dorsalis* (= *Unechis nigrostriatus*)

UHZ No. 480 *A. wiebeli* (= *Suta suta*)

Each of these species, with the exception of *A. wiebeli* were subsequently clearly illustrated by Jan and Sordelli (1873) from specimens in the Hamburg Museum. Comparisons of the specimens listed above with the relevant illustrations leave little doubt that they were the specimens figured. For these reasons it appears that the specimens listed above are the type specimens of Jan's respective species. In the case of *A. rhodogaster* we are satisfied that UHZ No. 477 is the holotype of Jan's species.

*Holotype:* UHZ No. R.00747 (old number 477). Universität Hamburg Zoologisches In-

stitut und Zoologisches Museum, Papendamm, Hamburg.

*Locality:* Australia (jar label and original description). No other data.

*Description:* Snout-vent length 248.5 mm. Tail length 65.6 mm. Total length 314.1 mm. Scales round midbody 15. Ventral scales 151. Subcaudal scales undivided, 51. Anal scale undivided. Upper labials 6, 3rd and 4th subocular. Lower labials 7. Rostral contacts 1st labials, nasals and internasals. Single preoculars contact 2nd and 3rd labials, nasals, prefrontals and supra-ocular. Frontal contacts prefrontals, supra-ocular and parietals. Post oculars paired, contact supra-oculars, parietals, upper anterior temporals and 4th and 5th upper labials. Temporals 2 + 2.

*Colour:* Dorsal surface greenish brown, ventral surface light grey, each ventral scale edged with dark grey. Snout and anterior portion of head similar to the body, but stippled with black, the stippling becoming denser posteriorly, until a darker colour predominates with a greenish-brown stippling from approximately a mid-line between the eyes. A pale orange coloured band across the nape, two to three scales in width. Sides of head greyish, with a series of longitudinal spots forming a dark stripe from immediately anterior to the nostril, through the eye, to the anterior edge of the nape band.

*Condition:* Well preserved.

*Hoplocephalus collaris* Macleay 1887, was described very adequately and the description agrees with *D. rhodogaster* as recognized here. In addition, the type locality (Bega, N.S.W.) is well within the known range of *D. rhodogaster*. The type specimen has not been located, and, as it was not mentioned in Goldman, Hill and Stanbury (1969) or Cogger (1979), is presumed lost.

*Pseudelaps minutus* Fry 1915, described from specimens from N.S.W. was placed in the synonymy of *D. mastersii* by Cogger (1979). The holotype, collected from Colo Valley,

N.S.W. (Reg. No. AM R3971) is conspecific with the holotype of *D. rhodogaster* and is transferred to the synonymy of that species here. The paratypes (Reg. Nos. AM R6643 and R6646) are also conspecific with the holotype of *D. rhodogaster*.

#### Other Specimens Examined

A further 35 specimens were examined, all from eastern New South Wales from the Blue Mountains in the north, to the Pambula area in the south.

*Size:* Largest adult: Snout-vent length 362 mm; tail length 98 mm; total length 460 mm. Juveniles at birth: Snout-vent length 111 mm; tail 28 mm; total length 139 mm.

*Scalation:* Scales round midbody 15. Ventral scales ranged from 141-155 with a mean of 147.2 (N=33). Subcaudal scales were all undivided and ranged from 41-54 with a mean of 47.8 (N=31). Anal Scale undivided in all specimens.

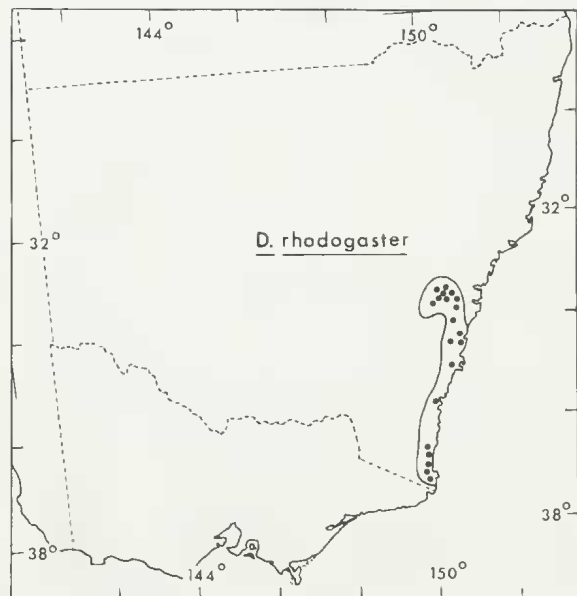


Figure 4—Map showing distribution of *Drysdalia rhodogaster*.



**Colour:** Juveniles at birth: Dorsal surface very dark brown, ventral surface orange-red. Head darker than body, snout dark brown, top of head black. Upper lip dark brown with a black stripe from nostril to eye and a broken black stripe from below eye to neck. Distinct light orange band across nape. Adults: Dorsal surface brown to olive-green, ventral surface yellow to orange. Snout same colour as body speckled with black, top of head black. Black stripe from nostril to eye and a broken black stripe from below eye to neck. A distinct light orange to light brown band 2 to 3 scales wide runs across nape, sometimes reduced to an ill defined lighter coloured patch.

**Localities and Registered Numbers:** New South Wales. (AM) Pambula R2386, R2433; Hazelbrook R6139; Barrangarry R7748, R7961, R10542-3; Macquarie Pass R11088; Jenolan Caves R11364; Lawson R11888; Wongawilli, via Dapto R12556; Leura R15074; Hurstville (?) R15085; Woodford R15299; Lockin Hill, near Shellharbour R17172; Batemans Bay R20751; Wentworth Falls R21046; Robertson R28260; Bilpin R29738; Merimbula R37373; Faulconbridge R40803; Bega R42062; Catherine Hill, near Picton R47279; Conjola R47404; (NMV) Katoomba D14314; Blackheath-Mt. Victoria D14315-8; Lawson D14319; Medlow Bath D16501; Ben Boyd National Park D47969; Blackheath D50482-3; Blue Mountains D50484; 5 km W. of Kiah D50563.

### Ecology

**Habitat:** *D. coronata* and *D. coronoides* occur mainly in tussock grasslands, grassy woodlands and associated swampy areas. *D. coronoides* also occurs in subalpine and alpine habitats. *D. mastersii* and *D. rhodogaster* on the other hand occur mainly in drier habitats and appear to be restricted to heathlands.

**Food:** The diets of the four species are discussed in detail by Shine (In press). The major food of *D. coronoides*, *D. mastersii* and *D. rhodogaster* are heliothermic skinks which comprise about 90% of food items. *D. coronata* has two major food sources as skinks and

frogs each comprise roughly 50% of all food items.

**Thermoregulation:** All species are shuttling heliotherms (*sensu* Rawlinson, 1974) basking only when necessary to elevate body temperature above the voluntary minimum and spending the rest of the activity period foraging in the shade. This assessment is confirmed by the analysis of prey items where heliothermic skinks predominate. *D. coronoides* (and possibly the other species) will also actively forage for food on warm evenings.

Thermal preferences are only available for *D. coronoides* and this species has a voluntary minimum body temperature of 24.8°C, a mean preference of 31.1°C and a voluntary maximum of 37.7°C (Rawlinson, 1974).

### Reproduction

The reproduction of all species is discussed in detail by Shine (In Press). All species are viviparous and clutch sizes range from 2-10 with means ranging from 2.8 (*D. mastersii*) to 5.4 (Tasmanian *D. coronoides*). The young are born from late February to mid April (Rawlinson, 1974; Shine In Press).

### Relationships

All four species are closely related and considered to be monophyletic with the species falling into two natural groups. The first group comprises *D. coronata* and *D. coronoides* which have differentiated across southern Australia. The second group comprises *D. mastersii* and *D. rhodogaster* which have differentiated in south-eastern Australia. Within the groups the relationship between *D. coronata* and *D. coronoides* does not appear to be as close as the relationship between *D. mastersii* and *D. rhodogaster*.

McDowell (1967) discussed the head musculature and hemipenial structure of many elapid snakes including *D. coronata* and *D. coronoides*. He concluded that these two species showed a relationship to the elapid genera *Notechis*, *Tropidechis* and *Oxyuranus*. Further, he stated that *D. coronata* appears to be a genuine evolutionary intermediate between *D.*

*coronoides* and *Notechis* as he could find no internal feature to separate *D. coronata* from *Notechis* despite the close resemblance between external features of *D. coronata* and *D. coronoides*. McDowell suggested that *D. coronata* may merit generic distinction.

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TABLE 1  
Ratio of length of frontal scale by width.

Species	Max.	Min.	Mean	N
<i>D. coronata</i>	2.11	1.56	1.78	30
<i>D. coronoides</i>	2.66	1.90	2.24	44
<i>D. mastersii</i>	2.81	2.00	2.41	21
<i>D. rhodogaster</i>	3.16	2.00	2.39	7

### Explanation of Plate

#### PLATE 12

- Dorsal view of Holotype of *Drysdalia rhodogaster* (Jan), total length 314.1 mm.
- Dorsal view of head of Holotype of *Drysdalia rhodogaster* (Jan).
- Lateral view of head of Holotype of *Drysdalia rhodogaster* (Jan).